

# FLIGHT OF FANCY?

## Aviation Industry Tries To Go Green

**AGENCIES**

**S**INGAPORE - From an emissions-reducing model jet that looks like something from a sci-fi movie to electric aircraft and sustainable fuel, the aviation industry is ramping up efforts to go green as consumer pressure grows.

In an era when teen climate activist Greta Thunberg opts to travel on an eco-friendly boat and "flight-shaming" is all the rage in her native Sweden, air travel's reputation has never looked as dire.

Aviation accounts for three percent of climate-damaging carbon emissions globally, according to the European Environment Agency, and the world is experiencing record heatwaves, wildfires and storm surges made worse by rising seas. "Sustainability" was the buzzword last week in Singapore at Asia's biggest air show - which was powered by solar panels - with manufacturers and airlines trying to outdo one another on vows to become more sustainable.

Some environmentalists however have criticised such pledges as "greenwash", PR stunts that will do little to mitigate the damage caused by the vast quantities of jet fuel burnt every year.

"Aviation is under significant pressure to improve its sustainability image," Paul Stein, chief technology officer for engine maker Rolls-Royce, told AFP.

Airlines are "working with us to find pathways to increase the availability of sustainable fuels, look at how electrification can impact them... and also looking to more and more efficient engines and airframes".

**Cutting emissions**

The aviation industry has pledged to reduce its net carbon emissions by 50 percent by 2050 compared with 2005 levels, and the British sector went further this month with a vow to achieve net zero emissions by the same date.

At the Singapore Airshow, European plane maker Airbus unveiled a model of a futuristic new jet that blends wings with body and has two rear-mounted engines. The demonstrator model's sleek design is meant to reduce aerodynamic drag, and the manufacturer says it has the potential to cut fuel consumption by up to 20 percent compared to current single-aisle aircraft.

Dubbed Maveric, the 2.2-metre-long (7.2-foot) model had its first test flight in June last year.

Franco-Italian manufacturer ATR was meanwhile keen to highlight that its turboprop aircraft -- popular for short hops, particularly in parts of Asia with poor infrastructure -- burns 40 percent less fuel compared with a jet of the same size.

"It is a trade-off between fuel consumption and speed," ATR chief executive Stefano Bortoli told AFP.

"You can gain five, 10 minutes with a faster jet but in terms of pollution, it is more damaging."

**Slow-moving solutions**

There have also been steps towards producing electric planes. The world's first fully electric aircraft -- designed by engineering firm

magniX -- made its inaugural test flight in December in Canada.

Swiss company Smartflyer is developing a hybrid-electric aircraft for four people and is aiming for a maiden flight in 2022. As well as reducing emissions, the aircraft is less noisy and cheaper to operate due in part to lower fuel costs. But Aldo Montanari, the company's head of avionics and user interface, cautioned such projects would not be quick.

"The pressure is quite big... and I think the industry has understood but they need time to react, they cannot do it in one year," he said. "It has to be safe."

Biofuels are touted as a major route for the aviation industry to cut carbon emissions, and several airlines have in recent years operated commercial flights using them.

But prices remain higher than regular fuel, and they represent just a tiny proportion of jet fuel used globally. Despite the efforts, environmentalists accuse the aviation industry of moving too slowly as more evidence emerges of the devastating impacts of climate change.

"It will take a long time for airlines to become sustainable," Dewi Zloch, climate and energy campaigner with Greenpeace, told AFP.

"Technological solutions will take decades."



## Smartphone Voting Stirs Interest—And Security Fears

**ROB LEVER**

**W**est Virginia's disabled residents and overseas military personnel will be able to vote by smartphone in the US presidential election this year, the latest development in a push to make balloting more accessible despite persistent security fears.

Rising interest in electronic voting has heightened concerns among security experts who fear these systems are vulnerable to hacking and manipulation that could undermine confidence in election results.

Overseas service members from West Virginia first voted by smartphone in 2018 with the blockchain-powered mobile application Voatz, which is now being tested in some elections in Colorado, Utah, Oregon and Washington state.

West Virginia recently expanded the program to people with physical disabilities.

A report released Thursday by Massachusetts Institute of Technology researchers uncovered Voatz "vulnerabilities" which could allow votes to be altered and potentially allow an attacker to recover a user's secret ballot. Voatz called the study "flawed" and said its app has been updated 27 times from the version used by researchers.

MIT researchers Michael Specter, James Koppel and Daniel Weitzner on Friday stood by their findings, saying they used recent versions of the app.

The researchers said that amid the uncertainty, election officials should "abandon the app for immediate use." Backers of mobile voting argue it is more efficient, and can improve accessibility for deployed troops, the elderly and other people who can't get to polling stations.

Former presidential candidate Andrew Yang endorsed the idea, saying, "Americans should be able to vote via their mobile device, with verification done via blockchain."

Critics however call for caution in light of an array of cybersecurity worries and a fiasco in Iowa over a mobile app that was used for vote tabulation, but could have been adapted for individual ballots.

While internet voting has been implemented in parts of the world, notably in Estonia, security is still a key concern, and that goes double for smartphone voting, say researchers.

"Internet voting can't be secured by any known technology," said Andrew Appel, a Princeton University computer science professor and



member of a National Academy of Sciences panel which produced a 2018 report, "Securing the Vote," that recommends against internet voting.

A key hurdle for online voting, including with smartphones, is ensuring ballots are secret while at the same time verifying the voter's identity and securing the ballot against tampering.

Appel noted that while many people are used to handling sensitive transactions like banking on a smartphone, the security risks of voting are unique.

The 2018 report, Appel noted, recommends the use of "human-readable" paper ballots which can be audited.

**Blockchain or not?**

Voatz claims its use of blockchain and other technologies can deliver both accessibility and security.

"Voatz leverages the latest security features of smartphones and facial recognition technology to verify and validate the identity of the voter, biometrics to secure that voter's identity, cryptography to automatically produce a paper ballot for tabulation at the jurisdiction, and blockchain for rigorous post-election audits to ensure voter intent is reflected in the overall count without revealing voter identity," a Voatz spokesperson said in an email to AFP.

The Voatz app requires users to scan a driver's license or other identity card and authenticate with a fingerprint reader and a selfie that is matched against it using facial recognition software.

But some analysts say the security using blockchain, which is a shared ledger used for cryptocurrencies that cannot be modified without all parties on the chain being notified, does not address the problems of electronic voting.

"Blockchain solves a problem for elections that pretty much doesn't

exist, which is securing votes already cast," said Matt Blaze, a Georgetown University professor specializing in cryptography who has studied election systems.

"It doesn't address the problem of how to know these are the votes people have cast."

Appel said if a ballot is altered by a hacker before it is tabulated, "the hacked ballot would go into the blockchain."

**Moving ahead online**

Still, internet voting appears to be moving forward in the US and elsewhere.

At least four US states allow some voters to return ballots using a web-based portal and 19 allow email or fax, according to the National Conference of State Legislatures.

Barbara Simons, board chair of the nonprofit election watchdog Verified Voting Foundation, said some firms are selling new technology by promising increased voter participation.

"This is an incredible myth—there is little to no evidence showing internet voting is going to increase voter participation," Simons told a conference at Georgetown University.

Outside the US, at least a dozen countries have experimented with some form of online voting, according to Verified Voting.

Estonia's system in place since 2005 is seen by some as a model to follow. But France dropped its system for overseas voting online in 2017 over security concerns.

As part of his presidential campaign, entrepreneur Andrew Yang endorsed smartphone voting.

Appel said one problem in evaluating online voting is that it may be impossible to detect a hack.

For a fully electronic system, he said, "there is no practical way to know if the vote is recorded in an accurate way." (Techxplore)

## Increased Hand Hygiene At Airports Can Reduce Spread Of Coronavirus: Study

**AGENCIES**

**W**ith the outbreak of deadly Coronavirus in China and other parts of the world, a recent study has suggested that implementing disease mitigation strategies like proper hand hygiene at airports across the globe can be effective in preventing the infection.

A study published in the journal - Risk Analysis - has analysed the impact of implementing disease mitigation strategies at airports in different parts of the world.

The study has found out that increasing traveler engagement with proper hand-hygiene at all airports has the potential to reduce the risk of a potential pandemic by 24-69 percent.

The researchers also identified ten critical airports, central to the global air-transportation network, and if hand-washing mitigation strategies are implemented in just these ten locations, the pandemic risk can drop by up to 37 percent.

"Hand-hygiene mitigation strate-



gies against global disease spreading through the air transportation network," read an excerpt from the study.

The study also suggests that if increased hand-washing practices were instituted in ten key airports there would be a significant impact on decreasing the spread of viruses.

These ten airports are not just locations that see large volumes of passengers, they also connect travelers with destinations in all parts of the world. The airports include, London Heathrow, Los Angeles Interna-

tional, John F. Kennedy, Charles de Gaulle, Dubai International, Frankfurt, Hong Kong International, Beijing Capital, San Francisco, and Amsterdam Schiphol.

"Airports, and airplanes, are highly infectious because they are close, confined areas with large, mobile populations," said the lead researcher Christos Nicolaides.

"Viruses are spread through bodily fluids, so keeping hands clean at major transport hubs is central to control spread," he added.

Airports also contain numerous highly contaminated surfaces that are frequently touched by travelers, including self-service check-in screens, gate bench armrests, water fountain buttons, door handles, seats and tray tables.

In addition to increasing the frequency at which public areas are cleaned and sanitized, using proper coughing etiquette, wearing face masks and proper hand hygiene practices are the most common actions that can be adopted by air travelers.

Currently, analyses show that, at most, one in five people have clean hands at any given moment. If hand cleanliness at all airports increased from 20 percent to 30 percent, by increasing the capacity and/or awareness of hand-washing, the impact of a potential infectious disease would have a global impact that is 24 percent smaller.

A cost-effective measure would be to adopt these practices at the top 10 influential airports, reducing the impact of the disease spreading to just 37 percent.

## 'Green Tea Extract Combined With Exercise May Reduce Fatty Liver'

**AGENCIES**

**I**n a recent study, researchers have come up with a potential health strategy to combat fatty liver disease. They have found that a combination of green tea extract and exercise reduced the severity of the obesity-related disease by 75 percent in mice fed a high-fat diet.

The outcome is important, explained Joshua Lambert, associate professor of food science, because non-alcoholic fatty liver disease is a significant global health problem that is expected to worsen. Because of the high prevalence of risk factors such as obesity and type 2 diabetes, fatty liver disease is forecast to afflict more than 100 million people by 2030. And there are currently no validated therapies for the disease. The study was published in the Journal of Nutritional Biochemistry.

In the study, mice fed a high-fat diet for 16 weeks that consumed green tea extract and exercised regularly by running on a wheel were



found to have just a quarter of the lipid deposits in their livers compared to those seen in the livers of a control group of mice. Mice that were treated with green tea extract alone or exercise alone had roughly half as much fat in their livers as the control group.

In addition to analyzing the liver tissues of mice in the study researchers also measured the protein and fat content in their faeces. They found that the mice that consumed green tea extract and exercised had higher

faecal lipid and protein levels.

"By examining the livers of these mice after the study concluded and by screening their faeces during the research, we saw that the mice that consumed green tea extract and exercised actually were processing nutrients differently -- their bodies were handling food differently," Lambert said.

"We think the polyphenols in green tea interact with digestive enzymes secreted in the small intestine and partially inhibit the breakdown of carbohydrates, fat, and protein

in food," he added. "So, if a mouse doesn't digest the fat in its diet, that fat and the calories associated with it pass through the mouse's digestive system, and a certain amount of it ends up coming out in its faeces."

It may be significant, Lambert explained, that mice treated with both green tea extract and exercised had higher expression of genes related to the formation of new mitochondria. That gene expression is important, he said, because it provides markers that will help researchers understand the mechanism by which green tea polyphenols and exercise might work together to mitigate fatty liver deposits.

"We measured the expression of genes that we know are related to energy metabolism and play an important role in energy utilization," Lambert said. "In the mice that had the combination treatment, we saw an increase in the expression of genes that weren't there before they consumed green tea extract and exercised."